The Distributive Property

The Distributive Property states that multiplying a number by a group of numbers added together is the same as doing each multiplication separately.

Example: \( 3 \times (2 + 4) \)

- \( \text{group} \quad 3 \times (2 + 4) = 3 \times (6) \)
- \( \text{OR} \quad 3 \times (2 + 4) = 3(2) + 3(4) \)

This property "distributes" a value to each number in the parentheses. This means that everything inside the parentheses is multiplied by the number outside.

\[ a(b + c) = ab + ac \]

Everyone in this problem got an "\( a \)" meaning that everything was multiplied by "\( a \)"

Example: \( 5(3 + 4) = \)

- \( \text{group} \)
- \( \text{separately} \)

Review

Multiplication can be expressed in 3 ways:
- using an "\( \times \)" 2 \( \times \) 3
- using a "." 2 . 3
- using parentheses 2(3)

Use the Distributive Property:

A. \( 11(3 + 6) \)

B. \( 8(4 - 7) \)

C. \( 3(2 - 6) \)
The Distributive Property

**Distributing with Variables**

\[ y + y + y + y + y + y = \]

When you have a single variable inside the parentheses and need to distribute the outside number, all you need to do is write that number directly next to the variable.

Example: \[4(w) = 4w\]

\[ 5(x) = \]

\[ 4(m) = \]

When you have a variable attached to a number inside the parentheses and need to distribute the outside number, multiply the numbers and keep the variable attached.

Example: \[4(6w) = 24w\]

\[ 5(2x) = \]

\[ 4(-2m) = \]

**Distributing with Integers & Variables**

A. \[8(x - 2)\]

B. \[10(3y + 7)\]

C. \[7(4z - 9)\]

D. \[5(2x - 10)\]

E. \[3(3x - 3)\]

F. \[6(4x + 7)\]